Remarks

Status of the Claims

Claims 1-3, 5-17, 19-25, 27-49, and 51-67 were pending in the application. All claims were rejected in the Office Action mailed January 25, 2007. By this paper, claims 1, 2, 6, 17, 28, 41, 48, 52, and 65-67 have been amended. Claims 19, 24, 42, and 47 have been canceled without prejudice or disclaimer. In view of the amendments and following remarks, reconsideration of the claims is respectfully requested.

Interview

Applicant wishes to express sincere thanks for the courtesy of the interview on May 17, 2007, in which Applicant made several proposals for claim amendments, each of which is discussed in greater detail below. Applicant appreciates the suggestions provided by the Examiner and her supervisor, and has incorporated these suggestions into the present claim amendments.

Claim Rejections

Claims 1-3, 5-17, 20-22, 24, 25, 27-42, 44-49, and 51-67 were rejected under 35 U.S.C. 102(e) as being anticipated by Ellis et al. ("Ellis"). Claims 19 and 43 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ellis in view of Lawler et al. ("Lawler"). Claim 23 was rejected under 35 U.S.C. 103(a) as being unpatentable over Ellis in view of Sullivan. These rejections are respectfully traversed.

Claim 1 has been amended to recite an article of manufacture including a computer-readable medium comprising:

a program interface object (PIO) for representing a particular television program within a memory of an interactive television system, the PIO comprising a separate data structure for encapsulating:

attribute data for storing a plurality of attributes providing information about the television program;

program code for carrying out a plurality of user-selectable actions within the interactive television system in connection with the television program, wherein the **program code comprises a routine in a machine independent format that is executable in a Java virtual machine** within the interactive television system and any destination device to which the PIO is sent such that the routine **does not need to be installed on the destination device prior to receiving the PIO** in order to perform the associated user-selected action, and wherein **at least one of the attributes provides data used as input for a routine implementing at least one of the user-selectable actions such that the routine is not required to access resources external to the PIO for the data**; and

graphical data for displaying a visual indicator in a graphical user interface, the visual indicator comprising a **pictorial icon** to facilitate user selection of and interaction with the PIO, wherein the attribute data for each of the attributes, the program code for each of the routines implementing the user-selectable actions, and the graphical data for the pictorial icon associated with the particular television program are **transmittable as a unit** from one interactive television system to another in response to the encapsulating PIO being sent between the interactive television systems.

1. Cited references do not teach or suggest that PIOs include "routines" for implementing associated actions.

The Office Action appears to be arguing that because Ellis discloses an "online program guide," tthe screen displays of FIG. 7 and FIG. 8 (cited for the claimed PIOs) are Web pages. See Office Action at pages 4-5. Then, based on a dictionary definition, the Office Action argues that Web pages "consist of an HTML file, with associated files

or scripts." *Id.* Finally, based on another dictionary definition, the Office Action argues that a script is a program.

In the Interview, Applicant argued that this argument fails in two ways. First, the definition of a Web page does not require a script. Web pages need not have scripts. Indeed, Ellis is completely silent about scripts. Second, even if Ellis taught scripts, there is no teaching or suggestion that the scripts would be embedded in the same data structure used for storing the attribute data and graphical data.

The Examiner clarified the Office's position in the interview, suggesting that HTML "hyperlinks" could read on the claimed "program code for carrying out a plurality of user-selectable actions." Further, the Examiner pointed to paragraph 104 of Ellis, which refers to encapsulating "program guide information" in "component object model (COM) objects."

Applicant has amended the claims to remove any doubt that the claim is not referring to hyperlinks. As amended, claim 1 recites that the program code stored within the PIO comprises a routine in a machine independent format that is executable in a Java virtual machine. Support for this amendment may be found, for example, in pages 17 and 18, in which the specification teaches that actions may be represented within the PIO as "program code" in a machine-independent format, and that the actions may also be termed "methods" or "functions." The term "method" is understood in the art to mean:

> In object-oriented programming, a procedure that is executed when an object receives a message. A method is really the same as a procedure, function , or routine in procedural programming languages. The only difference is that in object-oriented programming, a method is always associated with a class.

> (http://www.webopedia.com/TERM/m/method.html)
> (Emphasis added).

The term "function" means:

> (1) In programming, a named section of a program that performs a specific task. In this sense, a function is a type of procedure or routine. Some programming languages make a distinction between a function, which returns a value, and a procedure, which performs some operation but does not return a value.
> (http://www.webopedia.com/TERM/f/function.html)
> (Emphasis added).

While it may be possible to confuse a hyperlink with the claimed "program code," it is not possible to confuse hyperlink with a "routine" or "procedure," which are generally associated with a plurality of instructions, *e.g.*, "[a]n ordered set of tasks for performing some action." (http://www.webopedia.com/TERM/p/procedure.html). A hyperlink would not normally be referred to as a "routine" by a person having ordinary skill in the art ("PHOSITA").

Ellis does not disclose or suggest representing actions within a PIO as a routine or procedure. In the interview, the Examiner referred specifically to paragraph 104 of Ellis, which is reproduced below for the Examiner's convenience.

> Access communications may include, for example, commands, requests, messages, remote procedure calls (e.g., using a proxy-stub pair), or any other suitable client-server or peer-to-peer communication. Access communications may also involve, for example, complex communications between application constructs running on remote program guide access device 24 and interactive television program guide equipment 17. Objects running in the two versions of the program guides, for example, may communicate using an Object Request Broker (ORB). The ***program guide information*** may, for example, be encapsulated as component object model (COM) objects and persisted to files that are transmitted over remote access link 19. In another approach, access communications

> may include HTML formatted markup language documents (e.g., web pages), that are exchanged between remote program guide access device 24 and interactive television program guide equipment via Internet service system 61. (Emphasis added).

Ellis merely states that a COM object can be used to store program guide information. However, program guide information does not normally include "routine[s] in a machine independent format that [are] executable in a Java virtual machine within the interactive television," as claimed. Indeed, program guide information is defined by Ellis in paragraph 103 as "reminder information, listings information, recording information, message information, status information, parental control settings, audio and video, status or polling information, user information, favorites settings," etc. There is no teaching or suggestion that program guide information comprises program code, let alone routines.

Because Ellis does not teach the inclusion of routines in a PIO, it cannot satisfy the further limitation that the routine encapsulated within the PIO "does not need to be installed on the destination device prior to receiving the PIO in order to in order to perform the associated user-selected action." In other words, Ellis must install software on any device receiving his COM objects to perform actions in connection with the represented television programs. If the functionality is not already there, the arrival of one of Ellis' COM objects will not provide it. Therefore, Ellis violates the express language of the claim.

Accordingly, Ellis is deficient in that it does not disclose the identical PIO data structure including (1) attribute data, (2) program code (routines) for user-selectable actions, and (3) graphical data (pictorial icon), nor does it teach that routines for carrying

out PIO actions do not have to be pre-installed on a destination computer. Anticipation under section 102 is proper only if the reference shows exactly what is claimed. MPEP § 2131.01. "[E]very element of the claimed invention must be identically shown in a single reference." In re Bond, 910 F.2d 831, 15 USPQ 2d 1566 (Fed. Cir. 1990). Because Ellis does not disclose the identical data structure, a section 102 rejection is improper. Applicant respectfully submits that none of the other cited references, alone or in combination, teach or suggest these limitations.

2. The cited references do not teach or suggest that actions are encapsulated within a PIO as routines in a machine independent format and are executable in a Java virtual machine.

Ellis, as well as the other cited references, is completely silent about "virtual machines" or "Java virtual machines." What Ellis does refer to, as noted above, is the component object model (COM). However, the component object model does not imply machine-independent program code, as claimed. COM was developed by Microsoft as a language-neutral way of implementing objects such that they can be used in environments different from the in which one they were created. However, code compiled for an x86 processor would not be executable on a PowerPC, notwithstanding COM. Thus, it is not machine independent, as claimed.

In the interview, the Examiner suggested that a Web browser could be considered a "virtual machine." Even if this were the case, the fact that the program code comprises routines (rather than merely hyperlinks) suggests that more than a simple Web browser is needed. Applicant respectfully points out that a PHOSITA would not normally refer to a Web browser as a virtual machine. A virtual machine is normally

defined as "a self-contained operating environment that behaves as if it is a separate computer." (http://www.webopedia.com/TERM/v/virtual_machine.html). For example, Java applets run in a Java virtual machine (VM) that has no access to the host operating system. Thus, a Java application will run the same in any Java VM, regardless of the hardware and software underlying the system. Because the VM has no contact with the operating system, there is little possibility of a Java program damaging other files or applications.

Because Ellis is completely silent about virtual machines and, in particular, Java virtual machines, Applicant respectfully submits that Ellis does not support a section 102 rejection.

3. The cited references do not teach or suggest that at least one of the attributes provides data used as input for a routine implementing at least one of the user-selectable actions such that the routine is not required to access resources external to the PIO for the data.

PIOs are designed to be transportable from one ITV system to another (or between an ITV system and other user devices). Accordingly, certain actions (routines) may require access to particular information about the TV program. Since the repositories of that information may differ from device to device, the PIO is configured such that action routines may take as an input one or more of the attributes within the PIO. This eliminates the need for the action routines to have to access external resources, such as databases, for the information. See specification at pages 16, 24.

Ellis and the other cited references are silent about using PIO attributes as input for PIO routines such that the routines do not need to access external resources for information pertaining to the television program.

4. The cited references do not teach or suggest storing graphical data for a pictorial icon within the PIO.

In the interview, the Examiner suggested that text displayed in a graphical user interface constituted the claimed graphical data for a visual indicator. Applicant has amended the claim to recite that the graphical data is for a pictorial icon, as opposed to text. Various figures of the present application illustrate pictorial icons associated with PIOs. See, *e.g.*, FIG. 7.

While the Office Action may point to a different reference to show pictorial icons, Applicant respectfully submits that what is being claimed is not pictorial icons, *per se*, but pictorial icons being encapsulated with attribute data and program code. Screen shots of the type cited by the Examiner in Ellis (*e.g.,* FIG. 7 and 8) for the claimed PIOs do not reveal anything about the underlying data structures. Compare, for example, FIG. 7 of the present application (illustrated below) with the hypothetical FIG. 7A.

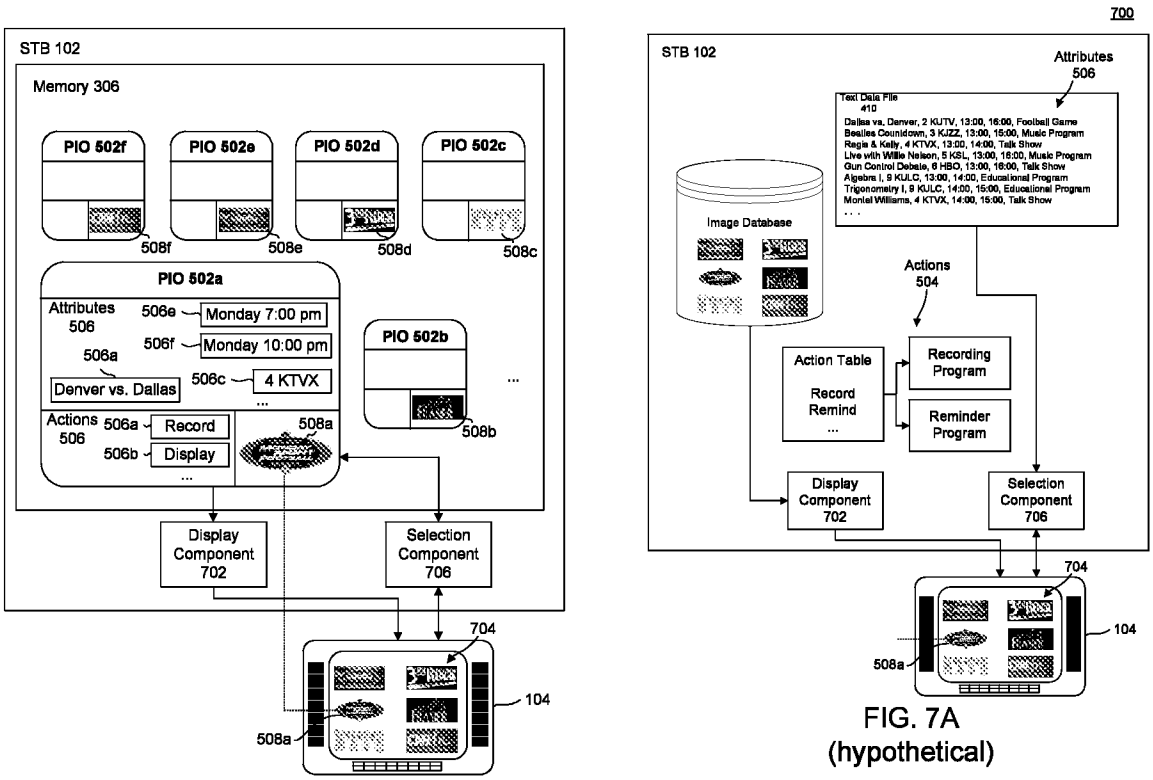


FIG. 7A
(hypothetical)

FIG. 7 illustrates a PIO data structure including attributes, program code (routines) and graphical data (pictorial icon) in a single data structure (object). By contrast, in hypothetical FIG. 7A, the same attribute data, program code, and graphical data is not encapsulated within a single data structure, as claimed. Both examples may produce the same user interface for display on a television, but are supported by radically different data structures. Thus, it is insufficient to simply point to an icon and suggest that it is included within a PIO, because it may, as illustrated in FIG. 7A, be included within a separate database. Similarly, it is insufficient to point to functions of a set top box (STB) and suggest that they are encapsulated within a PIO as routines, as is apparently being done in the Office Action at page 5 (with reference to Boyer). To support a section 102 rejection, a reference should show a data structure with the identical organization and elements. However, this is clearly not the case with any of the art of record.

5. The cited references do not disclose or suggest one of the actions (encapsulated as routine within the PIO) is a "send" action configured to transmit the PIO to a selected interactive television system of another user.

Claims 41 and 66 recite that at least one of the actions encapsulated as a routine within a PIO comprises a "send" action configured to transmit the PIO to a selected ITV system of another user. While the Office Action attempts to point to Ellis for the transmission of program guide data from a broadcasting facility to an ITV system or from one ITV system to another (see Office Action at pages 4-5), Applicant respectfully submits that the reference does not teach or suggest that the routine for sending the PIO is encapsulated within the PIO, itself. Thus, the claimed PIOs are "smarter" than

the data structures of Ellis, because they can transmit themselves from one ITV system to another based on routines stored within the PIO.

6. The cited references do not disclose or suggest filtering an initial set of PIOs by genre and displaying the pictorial icons corresponding only to the PIOs satisfying the filtering criteria.

Claims 65 and 67 variously recite:

> filtering an initial set of PIOs according to user-specified filtering criteria based on ***genres*** of the respective television programs;
>
> displaying the pictorial icons in the graphical user interface corresponding ***only*** to the PIOs satisfying the filtering criteria.

Because the PIOs represent individual programs, a user may desire to only receive PIOs corresponding to a certain genre, *e.g.*, sports. Specification at page 27. Accordingly, an initial set of PIOs (within the user's set top box or at the broadcast center) may be filtered according to user-specified filtering criteria, such as a particular genre. Only those PIOs satisfying the criteria are subsequently delivered to or displayed in the user interface. Displaying PIOs for all of the available television programs would be unmanageable and would violate the basic principle of reducing the number of options the user sees, as described at pages 1-2 of the specification.

The Office Action points to paragraphs 24, 88, and 71 of Ellis for the claimed filtering, which are reproduced below for the Examiner's convenience.

> [0027] As these examples serve to illustrate, the settings for any suitable program guide features may be adjusted using the program guide at one location in a household and applied by the system to selected other program guides in the household.

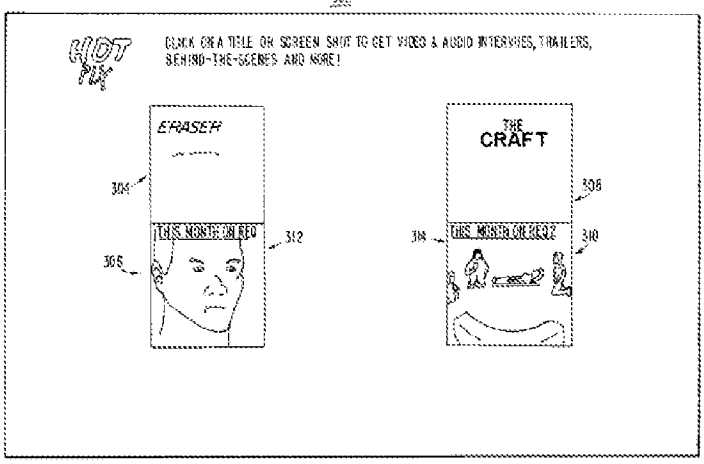
> [0071] In the system configuration of FIG. 2a, remote program guide access device 24 is connected to user television equipment 22. Television distribution facility 16 may distribute program guide data to user television equipment 22. User television equipment 22 may transfer the program guide data to remote program guide access device 24. User television equipment 22 may also transfer additional data that may be necessary for allowing remote program guide access device 24 to access various functions of the interactive program guide (e.g., reminder information, parental control settings, favorite channel settings, user profiles, etc.). Any suitable distribution scheme may be used. For example, user television equipment 22 may provide the data to remote program guide access device 24 continuously, periodically, using a client-server based approach, using a polling scheme, or using any other suitable approach. Remote program guide access device 24 may store the data if suitable for a particular transmission scheme.
>
> [0088] A more generalized embodiment of user television equipment 22 of FIG. 3 is shown in FIG. 4. As shown in FIG. 4, program guide data from television distribution facility 16 (FIGS. 2a-2d) is received by control circuitry 42 of user television equipment 22. Control circuitry 42 may also send data and commands or requests back to television distribution facility 16. The functions of control circuitry 42 may be provided using the set top box arrangement of FIGS. 2a and 2b. Alternatively, these functions may be integrated into an advanced television receiver, personal computer television (PC/TV), or any other suitable arrangement. If desired, a combination of such arrangements may be used.

None of these cited paragraphs even hints at filtering an initial set of PIOs, let alone filtering them according to genre. The mere fact that an ITV system may have "parental control settings, favorite channel settings, user profiles," etc., does not imply that PIOs are filtered by genre and that only PIOs satisfying user-specified filtering criteria are displayed in the graphical user interface.

7. The cited references do not teach or suggest displaying the PIOs in a graphical user interface other than a grid-based electronic program guide with rows corresponding to channels.

Claims 17, 65, and 67 recite that the visual indicators are displayed in a graphical user interface "other than a grid-based electronic program guide with rows corresponding to channels." To allegedly meet this limitation, the Office Action refers to FIG. 24 of Boyer (reproduced below).

FIG. 24



However, the icons displayed above do not meet the definition of PIOs. There is no teaching or suggestion that the icons are visual indicators for a data structure that includes:

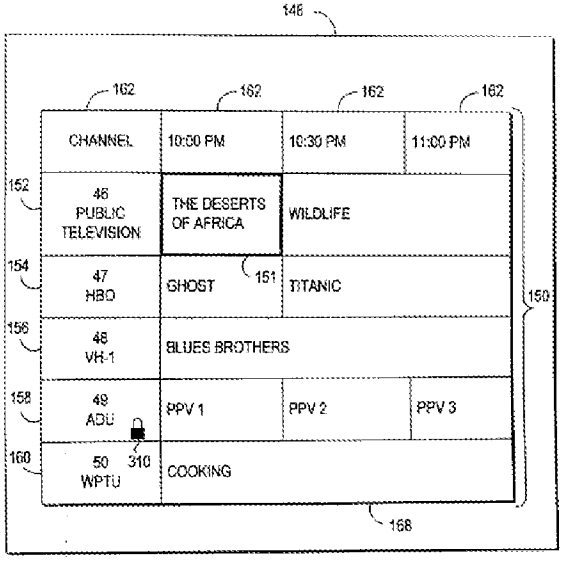
> attribute data for storing a plurality of attributes providing information about the television program;
>
> program code for carrying out a plurality of user-selectable actions within the interactive television system in connection with the television program, wherein the program code comprises a routine in a machine independent format that is executable in a Java virtual machine within the interactive television system and any destination device to which the PIO is sent such that the routine does not need to be installed on the destination device prior to receiving the PIO in order to perform the associated user-selected action, and wherein at least one of the attributes provides data used

as input for a routine implementing at least one of the user-selectable actions such that the routine is not required to access resources external to the PIO for the data; and

graphical data for displaying a visual indicator in a graphical user interface, the visual indicator comprising a pictorial icon to facilitate user selection of and interaction with the PIO, wherein the attribute data for each of the attributes, the program code for each of the routines implementing the user-selectable actions, and the graphical data for the pictorial icon associated with the particular television program are transmittable as a unit from one interactive television system to another in response to the encapsulating PIO being sent between the interactive television systems.

On the contrary, the icons of Boyer's FIG. 24 appear to be merely links to video and audio interviews, trailers, etc. A PHOSITA would not mistake these advertising links for the claimed PIOs, which encapsulate attribute data, program code (routines), and graphic data (pictorial icons) in a single data structure and provide expanded functionality.

Applicant respectfully notes that when the Office Action is attempting to show the claimed PIO data structure, it refers to a grid-based EPG (see FIG. 7 of Ellis):



Accordingly, if Ellis' FIG. 7 is what the Examiner equates with the claimed "discrete data structure" (PIO), then it is unfair to point to a different figure for the non-grid EPG without explaining how the data structures allegedly represented by Ellis' FIG. 7 are also represented in Boyer's FIG. 24. Applicant respectfully submits that this cannot be done, because Boyer is silent about anything that would satisfy the definition of a PIO, *i.e.*, object encapsulation, storing program code (routines) within an object representing a TV program, etc.

Conclusion

For at least the foregoing reasons, the cited prior art references, whether considered individually or in combination, fail to disclose each of the limitations in any of the pending independent claims. For at least the same reasons, each of the claims depending therefrom are also patentably distinct from the cited prior art. Therefore, all claims are believed to be in condition for allowance. A Notice of Allowance is respectfully requested. The Examiner is encouraged to contact the undersigned at the telephone number provided below for a quick resolution of any remaining issues.

Respectfully submitted,

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